

AN ANALYTIC HIERARCHY PROCESS BASED APPROACH TO THE DESIGN AND EVALUATION OF A MARKETING DRIVEN BUSINESS AND CORPORATE STRATEGY

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Abstract—Changes in the business environment suggest that to assure survival and growth in the 1990s and beyond, corporations must pay increased attention to creativity in generating strategic directions, rigor in the evaluation of strategic options on multiple and interdependent objectives, and vision and focus to assure effective utilization of resources. Here we present the conceptual structure of such an approach and review a number of recent applications.

1. INTRODUCTION

The dramatic changes in the business environment, as highlighted in Fig. 1, suggest that the old and proven ways of doing business may not suffice to assure survival and growth in the 1990s and beyond. The heightened environmental uncertainty and complexity calls for increased attention to creativity in generating strategic directions for the firm, rigor in the evaluation of the strategic options on multiple and interdependent objectives, and vision and focus to assure effective utilization of resources. Most managers could greatly benefit from a framework and methodology which would allow them to accomplish these tasks while at the same time assuring that the strategy is driven by the critical *marketing considerations*. The Analytic Hierarchy Process (AHP) provides such a framework and methodology.

The objective of this paper is to present the conceptual structure of such an approach and review a number of recent applications. More specifically, the first section will discuss the eight building blocks of a marketing driven business and corporate strategy. This is followed by a brief outline of an AHP formulation of a marketing driven strategy focusing on the hierarchy used to structure the process and report the results. The next section reports on a number of applications stressing the lessons learned from them.

2. THE BUILDING BLOCKS OF STRATEGY

A marketing driven strategic business plan requires the generation, evaluation and choice of eight interrelated components:

(1) *Mission*

The mission should offer an explicit, visionary, and unique direction for the entire planning process. It offers a first cut at the determination of the business boundaries of the firm. It also serves to mobilize the firm to act and differentiate it from others.

(2) *Planning horizon*

Planning should accommodate both the short- and long-term needs of the firm. Explicit tradeoff between the two time horizons should be identified.

- More intensified and sophisticated competition (from domestic and international firms) and changes in the competitive environment due to the formation of the new strategic alliances.
- Revolutionary technological developments.
- Increased integration of customer and resource markets.
- Highly volatile economic conditions.
- Changing political/regulatory environment.
- Introduction of innovative marketing and distribution practices and organizations.
- Expanding internationalism of business.
- Changing and more sophisticated consumer markets.
- Heightened awareness of ethical/moral considerations.
- A climate of more litigations (product liability) leading to increased cost and risk of doing business and of introducing innovative new products.

Fig. 1. The changing business environment.

(3) *Environmental scenarios*

Planning should take explicitly into account the expected environment. An explicit and clear understanding of the environmental forces facing the firm could also aid in generating creative strategic options aimed at turning environmental threats into opportunities. Such scenarios could also provide the basis for the development of contingency plans. Whereas it is often convenient to summarize the various environmental forces in the three scenarios of pessimistic, optimistic and status quo, it is essential to conduct a detailed environmental analysis focusing on the market, competition, technology and other environmental forces, to identify the key threats and opportunities facing the firm.

This analysis can include the identification of:

- likely external and internal problems that might prevent achieving the objectives of the strategic business unit (SBU) and the firm;
- key internal strengths and external opportunities facing the SBUs and the firm;
- complete competitive analysis encompassing all the critical success factors facing the firm;
- the likely trend in the various external and internal forces, their key interdependencies and expected impact.

(4) *Objectives*

It is imperative that management develop operational definitions of their objectives. The objective—whether a desired level and rate of growth of profit and sales, a reduction in downside risk, or other idiosyncratic management objective—should facilitate the accomplishment of the mission and provide the criteria for evaluating any strategic options.

(5) *Criteria*

The focus of any marketing driven strategy should be the target *market segments*. Since it is often difficult to directly evaluate the market segments on the firm's objectives, an intermediate set of criteria is suggested focusing on: (a) the attractiveness of the market segment (a composite dimension of market attractiveness variables such as size, growth etc.); (b) the firm's strength in the segment (also a composite dimension including measures of the firm's competitive strengths such as technology, distribution, its market share etc.); (c) synergy—a dimension recognizing the interdependency among activities which if not included explicitly as part of the strength dimension, should be used as a separate dimension.

(6) *Market/product portfolio*

Identification of the current, potential, and desired market/product portfolio is the focal point of the planning process. The desired product market portfolio includes current product/markets and new ones whether developed internally or externally (via marketing and advertising). The market/product portfolio is the core marketing dimension of the process. It is this focus on the selection of a portfolio of market segments which differentiates a marketing driven from a non-marketing oriented business or corporate strategy. The portfolio of segments and their associated products define the business boundaries of the firm and to the extent that the firm employs a global perspective, it would also incorporate the portfolio of *countries* by mode of operation. This step often involves three interrelated processes: (a) identification of new market segments (for target product by country); (b) evaluation of the current and new segments on the criteria and objectives specified in points (4) and (5); and (c) the generation and evaluation of a *portfolio* of product/segments which reflects portfolio considerations such as diversification vs focus or in the international context, the desired levels of integration and coordination of product/segments across countries.

(7) *Strategic options*

Creative options should be generated to meet the needs of the market segments and offer the firm a unique competitive advantage. These options should identify the major leverage points the firm has (e.g. research and development, manufacturing, marketing, finance etc.) and the strategic thrust most likely to meet three interrelated criteria: (a) meet the segment needs; (b) differentiate

the firm from its competitors; and (c) accomplish the firm's own objectives. The identification of strategic options should also include a determination as to whether the strategy can be accomplished internally or requires a merger, an acquisition, or other forms of strategic alliances. Since the generation and evaluation of strategic options is the primary outcome of any strategy process, it is especially important to assure that before finalizing the selected strategies, the participating managers examine whether better strategies can be developed by increasing, reducing, eliminating, adding activities (products, segments, countries, distribution systems etc.) or reallocating resources among the various options.

(8) *Functional and resource requirements*

Once the strategic options are identified, the functional requirements (from each operating department) to meet the needs of the strategic options should be identified and evaluated.

3. AN AHP FORMULATION OF A MARKETING DRIVEN BUSINESS AND CORPORATE STRATEGY

The selected methodology for implementing this approach is the AHP [1,2]. Following this approach, the entire process can be summarized as a single hierarchy whose lowest three levels present the desired business and corporate strategies. Their evaluation must reflect the relative importance of all the considerations at the higher levels of the hierarchy. Thus, in the hierarchy illustrated in Fig. 2, the priorities for allocating resources among the functional requirements are weighted (sum of the weights of each row is always 100) by their contribution to the achievement of the strategic options (new acquisitions, new markets to enter etc.). These options are in turn evaluated with respect to their ability to achieve the desired product/market portfolio of the firm. The selected portfolio is in turn evaluated on its market attractiveness, business strengths and synergy. These composite criteria are then weighted according to their importance to the achievement of the objectives of the firm, which in turn are weighted on their importance under (a) the expected scenarios and their likelihood of occurrence in the short and long term and (b) management tradeoff between short and long term in accomplishing its overall mission.

An AHP-based approach for the development of a marketing driven business and corporate strategy provides:

1. A marketing-oriented approach to strategic planning—this is done primarily through the focus on the market segments, and the design of effective positioning and associated marketing strategies which meet both the segments' needs and management's own objectives.
2. Planning by top management and the management of the strategic business units rather than by a planning staff.
3. A process which encourages and enhances
 - thoroughness in analyzing the situation,
 - creativity in generating strategic options,
 - rigor in evaluating the options.
4. A group process which allows the integration of diverse management perspectives and data. It helps top management reach consensus while at the same time identifying important areas of disagreement, which require further examination and study.
5. Short operational planning documents (focusing on the selected hierarchy), not lengthy reports.
6. A vehicle for coordinating the efforts of the various functional areas and assuring their cooperation in the implementation of an integrated business and corporate strategy.
7. A procedure which encourages sensitivity analysis and experimentation.
8. A continuous *process* which allows for update and modification as needed.

The hierarchy presented in Fig. 2 provides the framework for the planning process and a presentation of overall results. The complete results can often be provided in a short report

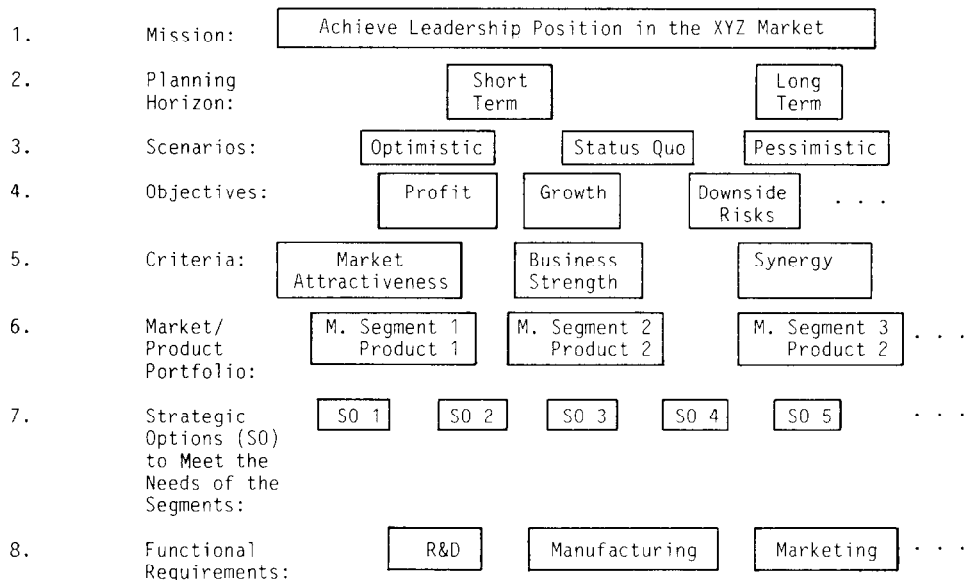


Fig. 2. The basic marketing driven planning hierarchy.

organized along the eight key levels of the hierarchy. Each of the strategy sections (Levels 6, 7 and 8 of the hierarchy) should include the selected strategies and identify:

- specific programs required to implement the strategy;
- required resources;
- expected results;
- individuals responsible for implementation.

4. APPLICATIONS

The marketing driven planning process described in the previous section and outlined in the hierarchy of Fig. 2 has been applied in a number of cases ranging from the selection of a portfolio of segments and products to the design of an overall SBU and corporate strategy. These applications involved a number of major U.S., Japanese and Latin American firms. Given the sensitive nature of some of the applications, the discussion in this section will focus on the lessons learned from them, in particular:

- (a) key conclusions from the applications;
- (b) modifications made to the basic framework of Fig. 2;
- (c) areas requiring development.

Key conclusions from the various applications of the marketing driven AHP planning process

Reflecting on the experience gained from six applications of the process described in Fig. 2, the following conclusions can be reached:

- Top management teams have no difficulty using the AHP.
- Having a structure such as the one proposed in Fig. 2 helps speed and facilitate the planning process.
- The process as outlined in Fig. 2 can be used both at the SBU and corporate levels.
- The development of a mission statement is often a difficult task. The business definition component of the mission is often revised after completing a first run through the hierarchy.
- Regardless of management's initial evaluation of the tradeoff between short and long term, it is helpful to present them with the results of a sensitivity analysis that encompasses the entire range of options from 90/10 short vs long term to 10/90 short vs long term.

- The construction of scenarios is a task requiring significant staff input, especially if this step is used as a basis for situation analysis involving both internal and external forces. New competitive entries, dramatic technological developments, regulatory changes, and significant shifts in the demographic and lifestyle characteristics of the target markets offer useful starting points for the construction of key environmental scenarios.
- All the applications to date have involved multiple objectives. The most common ones are profit and sales levels and growth and reduction of downside risk. Other objectives tend to reflect idiosyncratic characteristics of management. In all cases the relative importance of specific objectives varied depending on the expected scenario. Typical relationships involved increased importance of profits as the scenario became less favorable.
- Most managers have difficulty directly evaluating market segments and businesses as they relate to their firm's objectives. The use of market attractiveness and business strength as intermediary composite criteria does simplify the process. There is no agreement, however, across the various firms as to the specific components of each of the two criteria. The GE/McKenzie conceptualization offers a good starting point but is often modified by management. Managers also tend to vary in their evaluation of the relative importance of various components of these criteria as well as the relative importance of market attractiveness and business strength—some prefer to focus on attractive markets, while others prefer markets in which they have specific strengths.
- In most applications, synergy was viewed as a separate and significant criterion. Effective evaluation of positive and negative synergy among the segments and other portfolio operations requires, however, the identification of specific dimensions of synergy (e.g. distribution, manufacturing, procurement, etc.)
- The focus on the market segments to be served and their associated products is initially difficult, especially at the corporate level, but once explored, it greatly simplifies and focuses the remaining task of developing creative strategies to satisfy the needs of and benefits sought by the selected segments.
- The evaluation of the current and expanded portfolio of segments and products (on the selected criteria) is a relatively straightforward task. It is easily summarized in matrix form as segment/products by criteria, or on a market attractiveness business strength chart. It is much harder, however, to use the results of this evaluation as a guideline for the selection of innovative portfolio strategies (e.g. diversification, focus acquisition, etc.). Separate analysis should be undertaken focusing on the generation of portfolio strategies presented as a new level in the hierarchy. These portfolio operations reflect the results of the previous analysis and other considerations and should be evaluated on the objectives of the SBU or the firm.
- It has been helpful in all cases to augment the domestic portfolio of market segments and products with a global perspective focusing on segments by products by country by mode of operation. This is not an easy task, and lack of comparable information across countries has been one of the major obstacles. Such an implementation requires heavy reliance on the subjective judgments of experts.
- In a number of cases, management found it helpful to supplement the basic hierarchy with a direct evaluation of the segments and their associated products (and countries by mode of operation) on the requirements for success vs the firm's expected strengths under each of the expected scenarios.
- The generation of strategic options has greatly benefited from the use of analogies and other approaches for enhancing creativity [3, Chap. 9].
- The focus on market segments and their associated strategic options helps in integrating the various functions (e.g. R&D, manufacturing, finance, marketing etc.) in a coherent, focused direction.

- All the participants in the various applications found the sensitivity analysis to be of great value and a useful input to the revision of previous decisions.

Special modifications

In the course of the six applications, a number of modifications of Fig. 2 were employed. These included the following.

(a) *Incorporating a dynamic analysis of the competitors and their likely responses to the firm's strategy.* The basic model does not allow a dynamic competitive analysis and tends to view, as do most planning processes, the competition as part of the environment. To allow for the consideration of likely competitive reactions, the basic approach was supplemented by a parallel hierarchy for the key competitor(s). This involves role playing the competitor(s)' likely actions and reactions. This dynamic AHP framework is illustrated in Fig. 3. It provides the framework for a series of iterations between the left- and right-hand-side hierarchies. The process starts by identifying the "best" strategy for the firm (say, segment/positioning A and strategic thrust 1). This strategy is now introduced as part of the scenario facing the key competitor (say, scenario 1) and the competitor's best strategy, reflecting our strategy as part of its environment, is now assessed. This strategy (segment/positioning D and strategic thrust 2) is now considered part of the scenario of our firm, and the previous strategy and other strategic options are examined against it to assure that the selected strategy is the best one. The series of iterations can continue until a "quasi optimal" strategy is found. In a number of applications of this procedure, about five iterations were required to select the best strategy.

(b) *Developing supplemental hierarchies.* In a number of cases, it was found that the basic hierarchy presented in Fig. 2 had to be supplemented with a more specific hierarchy for the completion of specific tasks. For example, in deciding on an R&D/technology licensing and acquisition strategy,

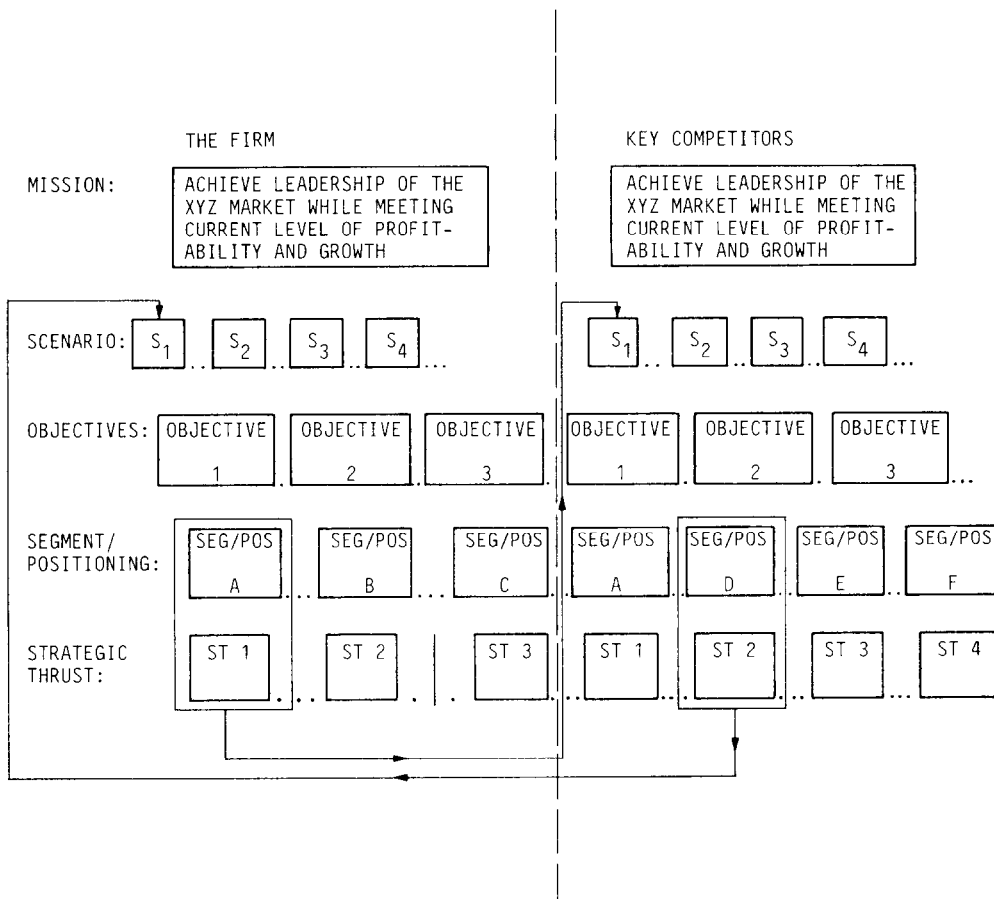


Fig. 3. A dynamic AHP approach to competitive strategy analysis.

it was found that the top six levels of the hierarchy in Fig. 2 provide the basic structure but that two new and interrelated hierarchies with additional Levels 7 and 8 should be developed. The first focused on the product concepts most appropriate to reach each segment as Level 7, and R&D project or technology licensing and acquisition options required to develop the product concept as Level 8. A second hierarchy was then developed in which the various R&D projects and technology, licensing and acquisition options (Level 8) were evaluated on a new set of criteria incorporating likelihood of success, expected cost and completion date, and synergy among the projects (as a new Level 7).

Areas requiring further development

The AHP using the marketing driven hierarchy outlined in Fig. 2 works! It can, however, be further improved by:

- Simplifying the data collection task by reducing the number of required judgments.
- Integrating diverse data collection procedures such as the basic reciprocal matrix using a 9-point scale with 100 points constant sum allocation or ranking for the evaluation of a large number of options.
- Integrating other data sources, especially market response functions and environmental scanning and forecasting, with management subjective judgments.
- Incorporating management uncertainty in various judgments.
- Linking the resulting priorities with optimization programs leading to optimal allocation of resources.

5. CONCLUSIONS

The AHP offers a unique and valuable method for the generation and evaluation of marketing driven business and corporate strategy. The basic hierarchy presented in Fig. 2, which focuses on a portfolio of target segments, assures that the planning process will be marketing driven.

The process has been successfully implemented in six diverse cases. The experience with these applications reinforces the favorable results obtained in many other applications conducted by Saaty and his colleagues. These results suggest that the process is easily implementable and offers a relatively quick and simple approach to business and corporate planning process.

The applications do support the need for further refinement of the data collection part of the process, its integration with other data sources and analytical procedures.

Another interesting future development is the linkage of the AHP to a series of expert systems. Expert systems could facilitate the accumulation and synthesis of knowledge, in the discipline itself and in the participating firms, particularly for such processes as portfolio analysis and strategy. Such development can be modeled for advertising messages [4]. Yet, even without such a development the AHP greatly facilitates a marketing driven planning process and encourages the generation of creative solutions and their rigorous evaluation.

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